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THE GENERA OF BRANCHIOSTOMIDAE.

By Theodore Gill.

The work of Mr. Arthur Willey on "Amphioxus and the Ancestry of the Vertebrates " (N. Y., 1894) is a useful compilation of what is known respecting the general anatomical characteristics of the Branchiostomids, but much remains to be yet made known regarding structural details and the range of variation, not only within the family, but also within specific limits. A first step toward the proper examination of such variations is to segregate the species into groups distinguished by positive structural peculiarities or associations of characters. For the expression of such structural peculiarities, generic diagnoses and terms are the best expedients, and they will differentiate most clearly characters of secondary importance from those of tertiary rank and the common or family characters or those of primary rank. Unfortunately, Mr. Willey has not distinguished between the various grades of characters, but has thrown all the representatives of the family into one genus without any sectional subdivision and (adapting the sequence of Dr. E. A. Andrews), has interposed "*B. cultellum* " between "*B. caribæum* " and "*B. bassanum*," and even (unlike Dr. Andrews) added to the genus the *Asymmetron lucayanum* of Andrews. There appear to me, however, to be at least three well-marked genera. These are *Branchiostoma*, *Epigonichthys* and *Asymmetron*. Another (*Paramphioxus*) has been proposed by Prof. Haeckel (1893) for the "*Branchiostoma bassanum* " of Günther, and it is gratifying to find that my views seem to be in accord with that eminent master of discrimination and valuation of morphological characters and their expression in diagnostic form. Doubtless Prof. Haeckel has good reasons for the genus *Paramphioxus*, but he has not yet formulated its characters, although he has indicated that it has unilateral gonads, and, such being the case, it must be related to *Epigonichthys*, although apparently distinguished from it by difference in the relative development of the fins. A fifth genus is apparently represented by the *B. pelagicum* of Günther, which may be named *Amphioxides.* The principal distinctive characters of generic importance appear to be the development of the gonads in two lateral rows or their restriction to one (right) side, the extent of the metapleural folds, the presence or want of what is generally called the ventral fin (sympodium), the extent and structure of the dorsal fin,[1] and the form of the posterior end of the body or tail.

The genera may be briefly defined as follows:

BRANCHIOSTOMA.

Branchiostomids with bilateral gonads, a rayed sympodium, low dorsal fin, and sagittiform expansion of caudal fin membranes.

Contains *B. lanceolatum* and most other species.

PARAMPHIOXUS.

Branchiostomids with unilateral gonads, a rayed sympodium, low dorsal fin, and expanded caudal membranes.

EPIGONICHTHYS.

Branchiostomids with unilateral gonads, a reduced rayed sympodium, elevated dorsal fin, and expanded caudal fin-membranes.

ASYMMETRON.

Branchiostomids with unilateral gonads, no sympodium, low dorsal fin, and an extended attenuated tail.

AMPHIOXIDES.

Branchiostomids with bilateral (?) gonads, no rayed sympodium (?), low dorsal fin, expanded caudal membranes, and oral cirri aborted (?[2]).

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[1] The so-called rays (Actinomimes) and their inclosing chambers (actinodomes) are characteristic of the Branchiostomids.

[2] "Buccal tentacles are absent," according to Günther. If such is really the case, and not the result of a failure in observation, the type is a very remarkable one, and would be an exception to a generally recognized character attributed to the family and even the order in the word "Cirrostomi."

P. S. Shortly before the proof of the present note came to hand, a brief article "On the species of Amphioxus," by J. W. Kirkaldy, became known to me; it is published in the Report of the British Association for 1894 (pp. 685, 686). Three genera are recognized, (1) *Branchiostoma* with 4 species, (2) *Heteropleuron* with 3 species, and (3) *Assymetron* with 1. *Heteropleuron* is a compound of *Paramphioxus* and *Epigonichthys*, and consequently the latter name should have been retained for it. *A. pelagicus* was overlooked by Mr. Kirkaldy as it had been previously by Messrs. Andrews and Willey.

RECENT LITERATURE.

Ord's Zoology.[1]—A patient bibliographic research undertaken by Mr. S. N. Rhoads to unearth a copy of the Second American Edition of Guthrie's Geography containing an account of North American Zoology by Mr. George Ord, was finally successful, and the one copy known to be extant was found in the possession of Dr. J. Solis Cohen of Philadelphia. Through the courtesy of the owner, Mr. Rhoads was allowed to reprint the part relating to Zoology, and in editing the work he has been zealous in reproducing as nearly as possible the style, form, paging, paragraphing, typography and inaccuracies of the original.

The desirability of a reprint of this rare book is evidenced by the numerous applications to librarians for citations from the work.

In an appendix Mr. Rhoads gives the complete titles of the different editions of Guthrie's Geography, some further historical data, and what may be termed a commentary on the species referred to by Mr. Ord. A number of names of American mammalia are settled beyond further disturbance.

A speaking likeness of the eminent naturalist faces the title page, and adds greatly to the interest of the volume.

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[1] A Reprint of North American Zoology, by George Ord. Being an exact reproduction of the part originally compiled by Mr. Ord for Johnson & Warner, and first published by them in their Second American Edition of Guthrie's Geography in 1815. Edited by Mr. S. N. Rhoads. Haddonfield, N. J , 1894.